COMMUTER RAIL
System Planning

MARICOPA ASSOCIATION of GOVERNMENTS

Commuter Rail Planning
Stakeholder Presentation
February 17, 2010

URS

AGENDA

1. Project Background and Overview
2. Ridership Forecasting Results
3. System Study Corridor Technical Recommendations
4. Short and Long-Term Implementation Steps
5. Next Steps
6. Questions and Answers

Project Background

&

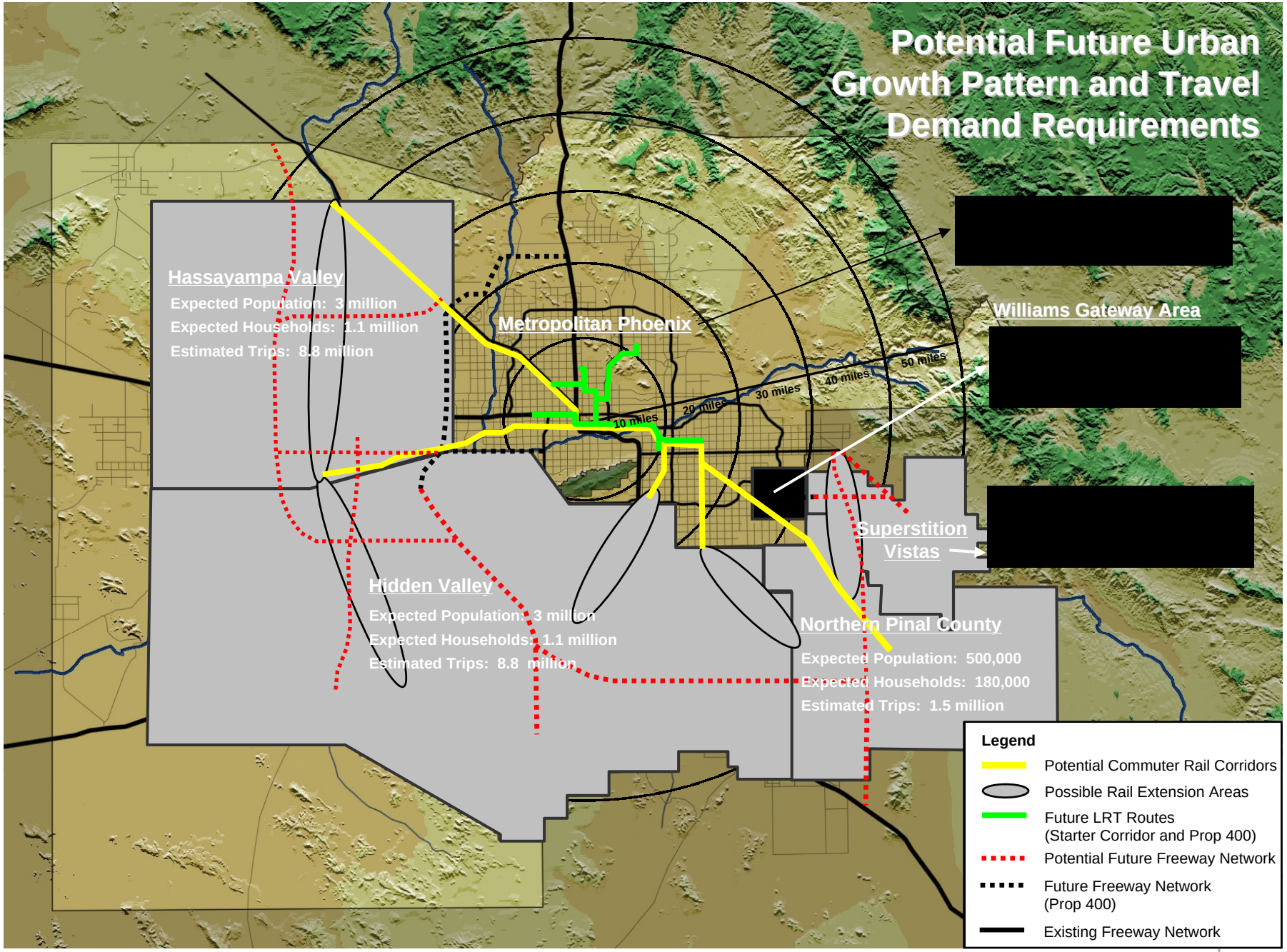
Overview

What is Commuter Rail?

- Larger, heavier, roomier than light rail
- Higher maximum speed, slower acceleration and deceleration than light rail, but still has good travel time and reliability
- Uses the latest in clean diesel technology
- Typically longer station spacing (every 3-5 miles on average) than light rail (1-2 miles) with emphasis on park-and-rides

What is Commuter Rail ? (cont.)

- Meets federally mandated structural requirements for rolling stock
- Can share ROW, track with freight (does not need exclusive right-of-way like light rail)
- Lower cost per mile ($10-$20M) than light rail ($40-$60M)



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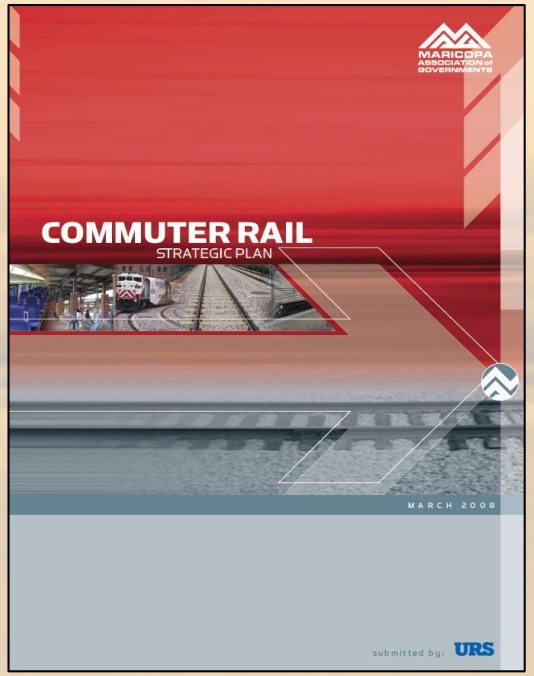
Commuter Rail Strategic Plan

- Previous transit studies showed that commuter rail service operating on freight rail lines could offer an alternative transportation mode in congested primary corridors in the region.

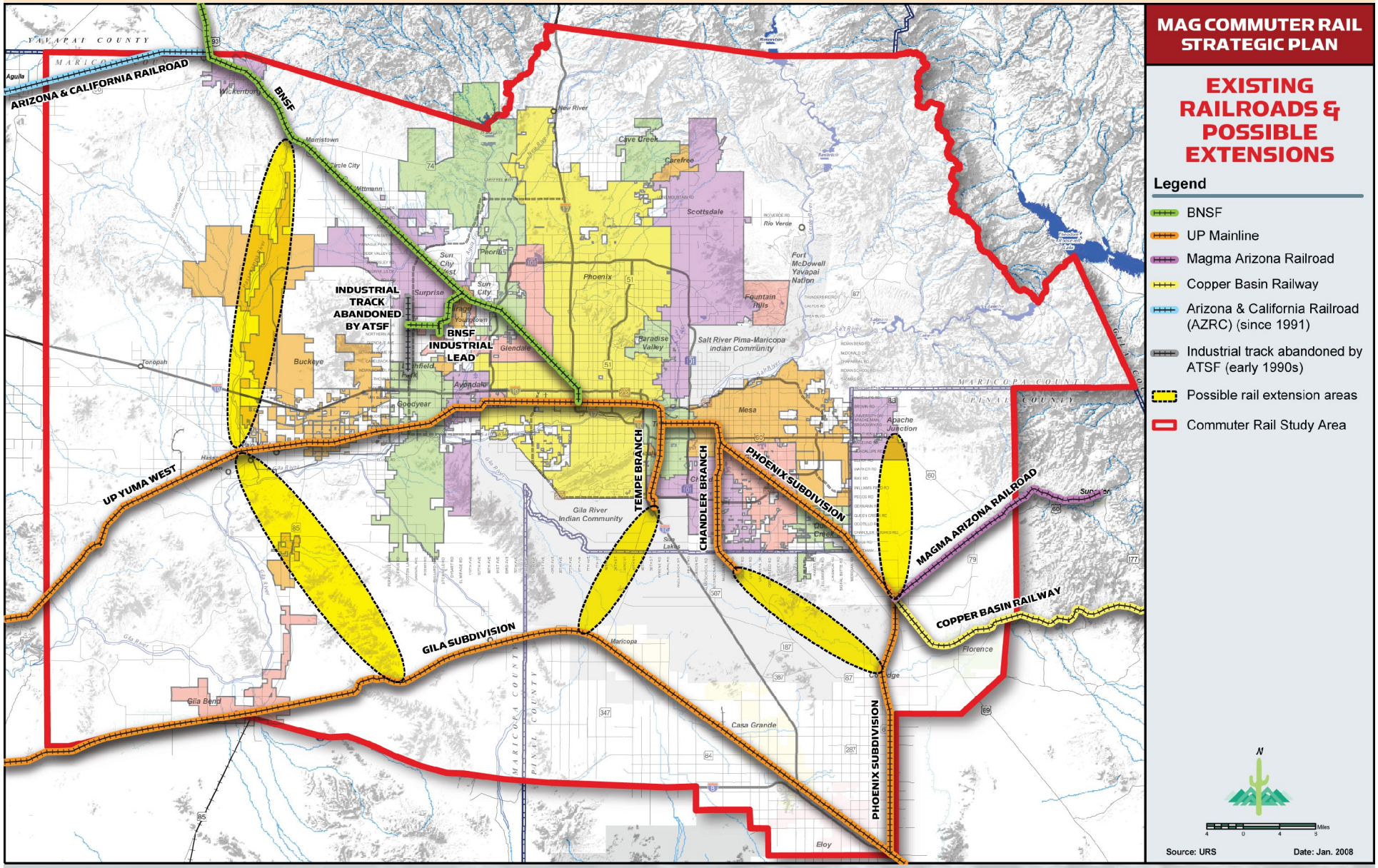
- Proposition 400 approved by voters in November 2004 and allocated a portion of sales tax revenues to study the options for commuter rail.



Commuter Rail Strategic Plan

- The Commuter Rail Strategic Plan was initiated by MAG to define the steps needed to be taken for Maricopa and Northern Pinal Counties to plan for and potentially implement commuter rail service.

- As a result of the Strategic Plan, MAG initiated:
  - Commuter Rail System Study
  - Two of the Corridor Development Plans, for the Grand Avenue and Yuma West Corridors



MAG COMMUTER RAIL STRATEGIC PLAN

EXISTING RAILROADS & POSSIBLE EXTENSIONS

Legend

- BNSF
- UP Mainline
- Magma Arizona Railroad
- Copper Basin Railway
- Arizona & California Railroad (AZRC) (since 1991)
- Industrial track abandoned by ATSF (early 1990s)
- Possible rail extension areas
- Commuter Rail Study Area

Objectives of the Commuter Rail System Study

- Evaluate commuter rail options for the MAG region and the potential connecting routes immediately adjacent to the MAG region.
- Establish priorities for implementing commuter rail service through the evaluation of ridership potential, operating strategies, and associated capital and operating costs.
- Evaluate existing freight corridors and possible rail extension areas identified in the Commuter Rail Strategic Plan.

Objectives of the Corridor Development Plans for Grand Avenue and Yuma West

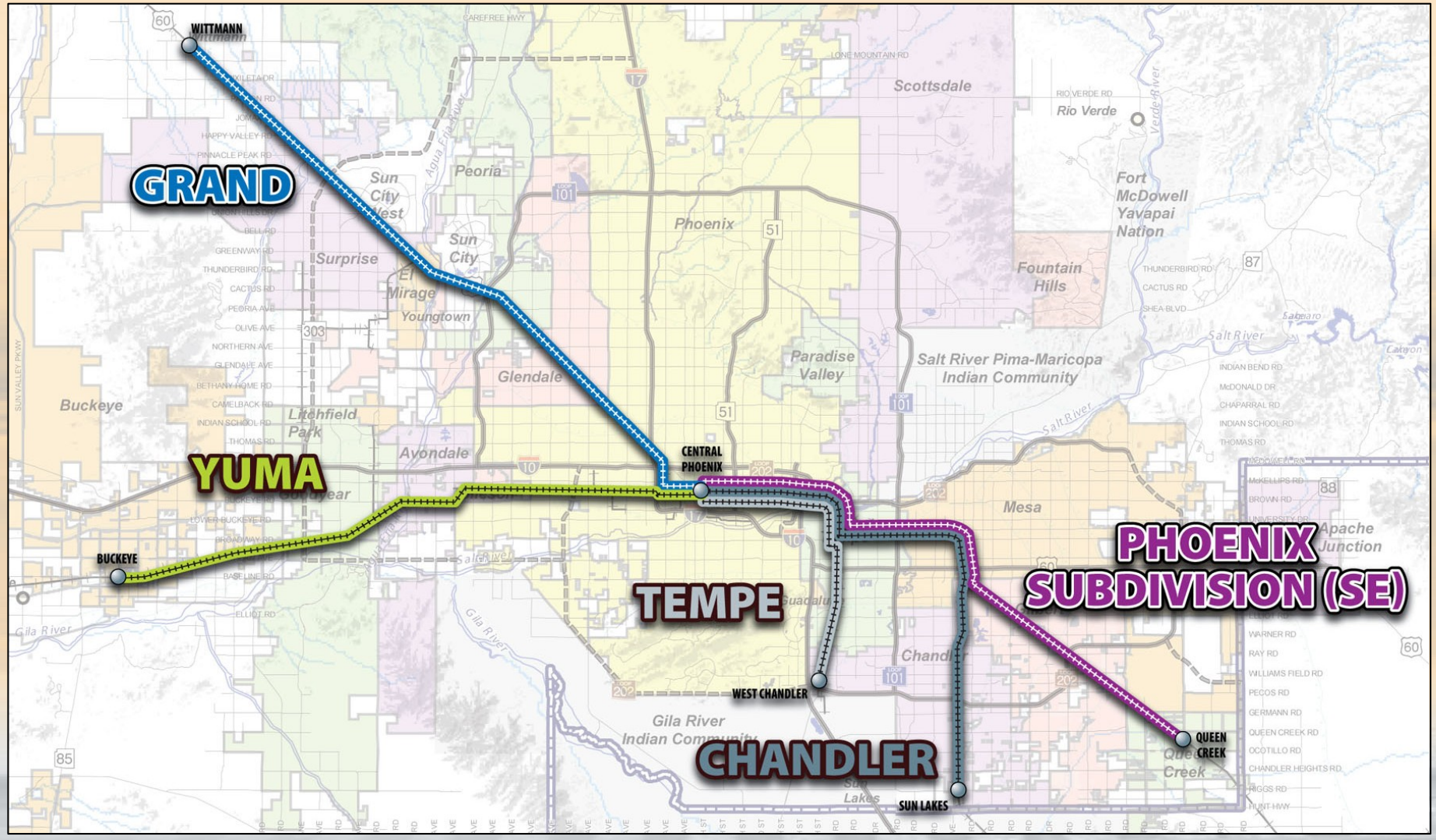
- Review and document existing and forecast demographics, land use, and travel characteristics in each corridor
- Identify barriers and opportunities for implementation of commuter rail service in the corridor
- Assess alternative implementation or operating scenarios and associated costs and ridership
- Recommend a conceptual path forward for funding and implementation

Ridership Forecasting

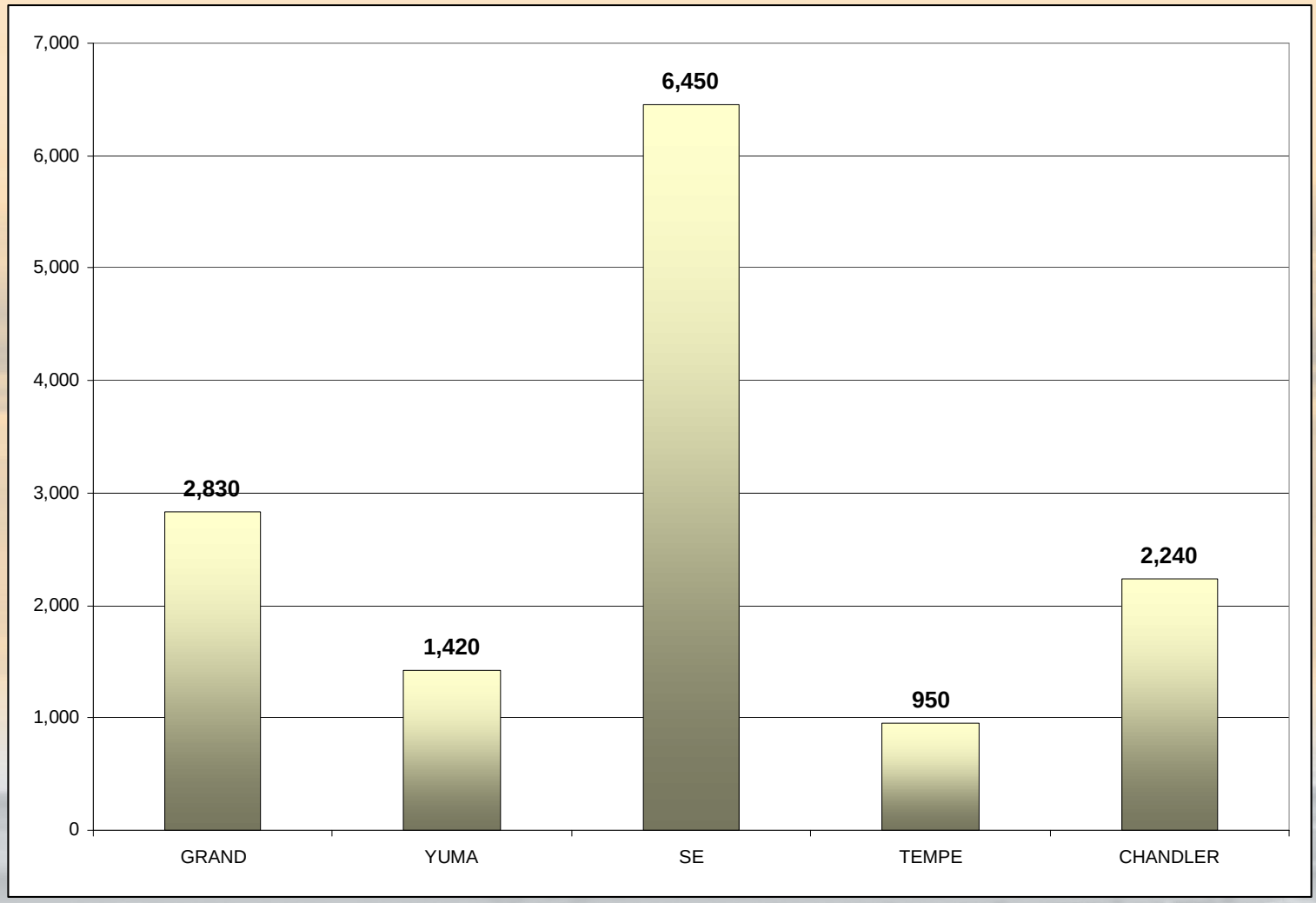
Ridership Forecasting Update

- Completed modeling for individual, stand-alone corridors as well as interlined corridors
- Conducted sensitivity tests to evaluate different scenarios, such as the elimination of some highway projects.
- Considered whether future extensions might be viable.

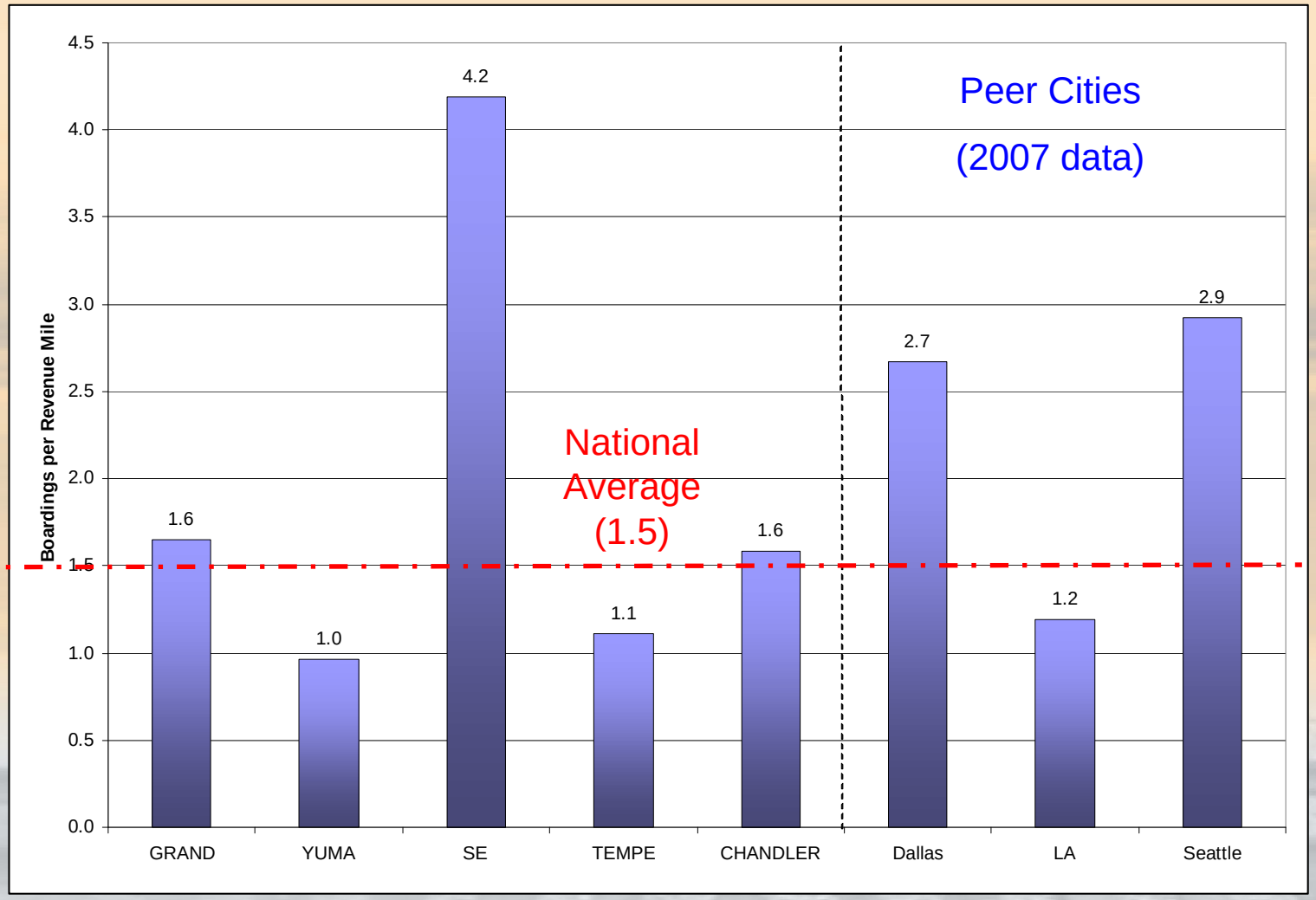
System Study Corridors



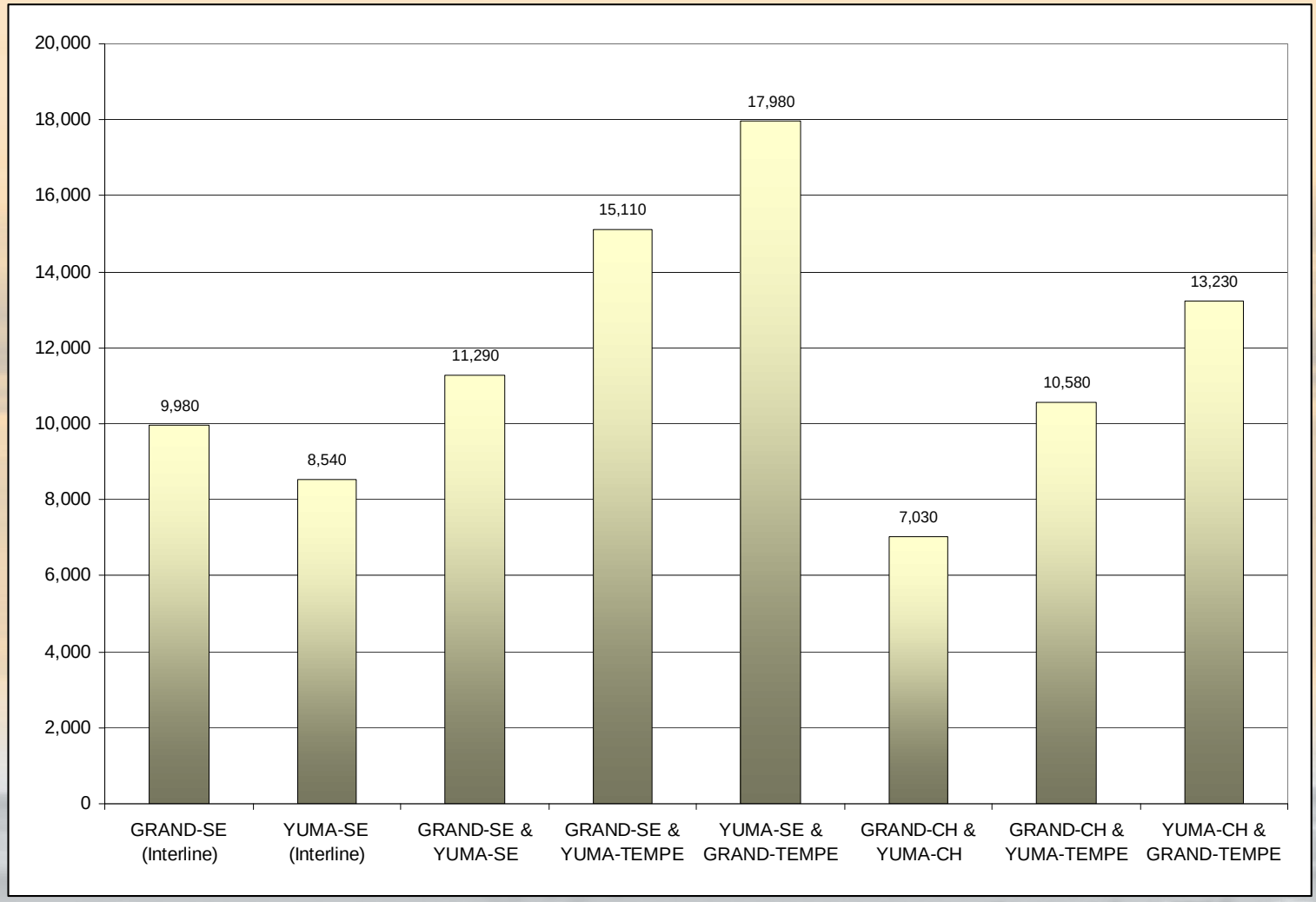
2030 Daily Ridership – Standalone Corridors



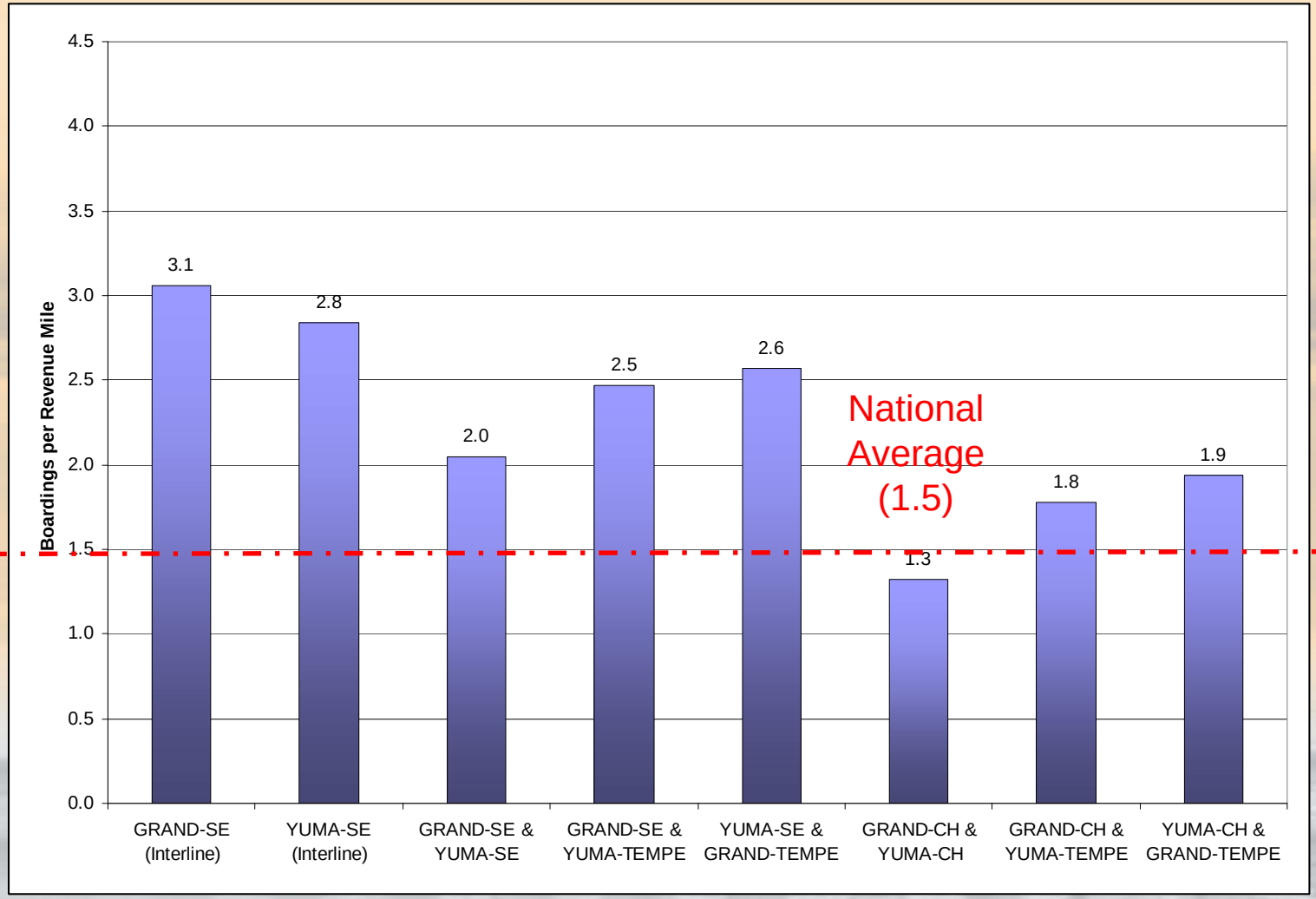
2030 Daily Boardings per Revenue Mile – Standalone Corridors



2030 Daily Ridership –Interlined Corridors



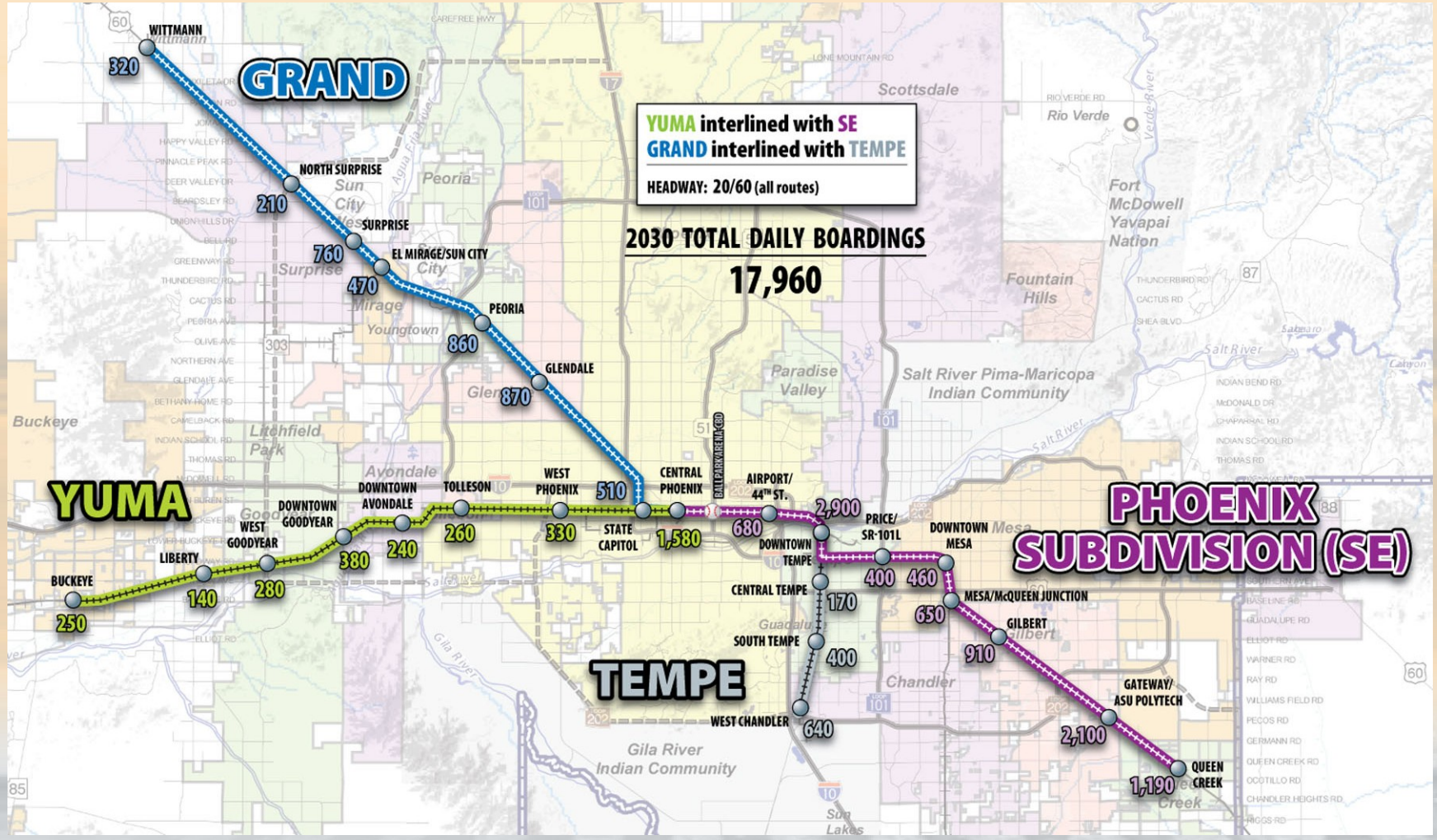
2030 Daily Boardings per Revenue Mile – Interlined Corridors



Comparisons to Other Commuter Rail Systems

System	Start Year	Length (in route miles)	Trains Per Day (Weekday)	Daily Ridership (Weekday)
Altamont Commuter Express (ACE) (San Jose-Stockton, CA)	1998	86	6-8	3,700
Coaster (San Diego-Oceanside, CA)	1995	41	22	6,000
Front Runner (Salt Lake City-Ogden, UT)	2008	44	71	4,100
Metrolink, San Bernardino Line (Los Angeles-San Bernardino, CA)	1992	56	39	11,950
Metrolink, Ventura County Line (Los Angeles-Oxnard/Montalvo, CA)	1992	71	22	4,000
Music City Star (Nashville-Lebanon, TN)	2006	32	11	1,000
New Mexico Rail Runner Express (Santa Fe-Albuquerque-Belen, NM)	2006	93	24	4,500
Sounder, North Line (Seattle-Everett, WA.)	2003	35	8	1,500
Sounder, South Line (Seattle-Tacoma, WA.)	2000	47	18	11,000
Trinity Railway Express (TRE) (Dallas-Ft. Worth, TX)	1996	34	49	9,800

Overall Most Productive System



Key Sensitivity Test Results: What might happen…

1. **... if selected highway projects are not built?**

2. **... between 2030 and 2035?**

→ ***Looking for differences of 10% or greater. Changes of less than 10% are considered nominal and generally within normal model variation.***

What might happen to ridership ...

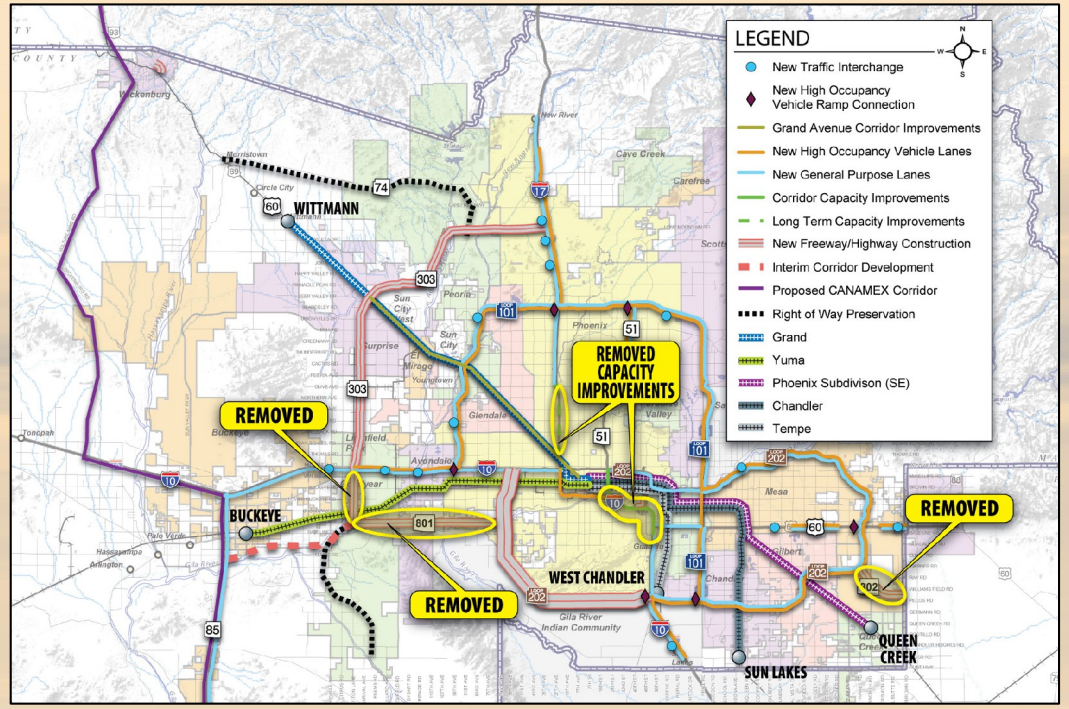
... if selected highway projects are not built?

What We Did:

- Removed projects from network and reran model
- Compared results with and without projects

Results
(% change without projects):

- SE: +10%
  (Removed SR-802)



Conclusions:

- In general, the planned highway projects do not substantially compete with commuter rail service.
- SE might see slightly higher ridership if the SR-802 project is not constructed.

What might happen to ridership ...

... between 2030 and 2035?

What We Did:

- Ran base model of all five base corridors with 2030 socioeconomic data
- Ran same model with 2035 socioeconomic data
- Compared results for 2035 vs. 2030

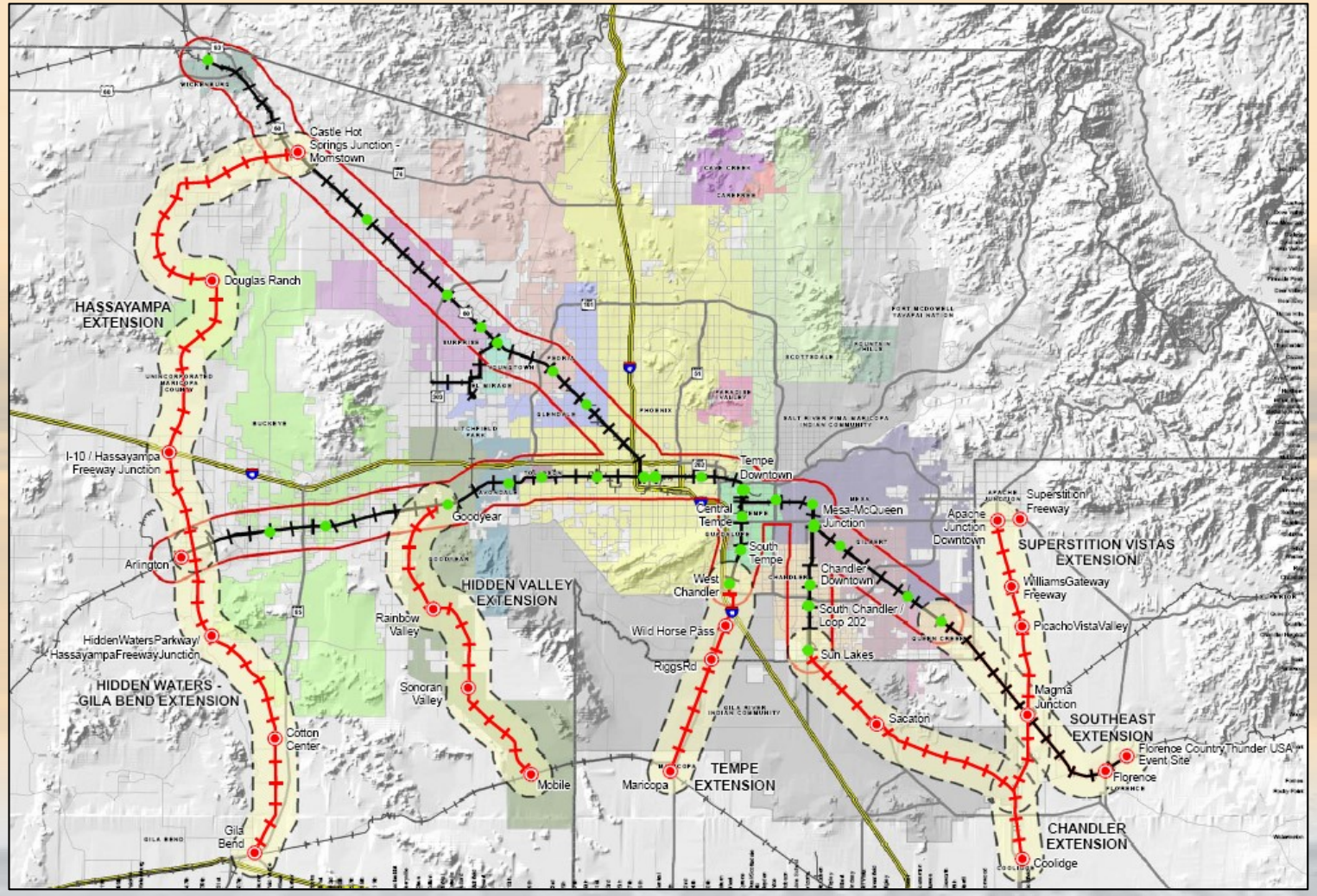
Results (% change with 2035 socioeconomic data):

- Grand: +17%
- Yuma: +19%

Conclusion:

- Grand and Yuma are likely to see a noticeable increase in ridership between 2030 and 2035 if development occurs as predicted.

Potential Corridor Extensions



Considering Potential Extensions

Forecasting for a Post-2035 Scenario

- Another method for analyzing extension viability
- Based on latest available MAG Future Land Use data (2007)
- For each corridor, total projected households with 8 miles and employment within .5 mile of target stations areas were correlated with ridership potential
- Normalized values for comparison across corridors by calculating households per mile and employment per station target area

Results: Post-2035 Ridership Potential

Post-2035 Extensions

Corridor	Distance (miles)	# of Stations	HHs (8 mile buffer)	HHs / Mile (8 mile buffer)	Employment (1/2 mile buffer)	Employment / Station (1/2 mile buffer)	Ridership Potential
Hassayampa	51.9	4	989,100	19,100	13,400	3,400	Moderate
Hidden Valley	31.3	4	778,000	24,900	13,200	3,300	Moderate
Hidden Waters	31.6	4	211,900	6,700	10,100	2,500	Low
Superstition Vistas - to Coolidge	33.2	6	1,289,600	38,800	80,800	13,500	High*
Superstition Vistas - to Florence	31.7	5	1,115,800	35,200	79,700	15,900	High*
SE Extension	23.7	4	934,700	39,400	5,500	1,400	High
Tempe Extension	18.2	4	704,000	38,700	7,000	1,800	High
Chandler Extension	29.4	3	875,100	29,800	34,700	11,600	High*

* Denotes corridors with high employment projected in the station areas.

Conclusions

- **Higher ridership potential exists for future extensions in eastern Maricopa County and northern Pinal County.**
- **Superstition Vistas extension is the most productive.**
- **Ridership potential in the far West Valley is more viable in the longer-term, based on available projections and plans.**
- **Low ridership potential is observed along the Hidden Waters extension to Gila Bend.**

Technical Recommendations for System Study Corridors

Evaluation Criteria

Evaluation criteria for stand-alone corridors:

- Travel time savings
- Boardings per revenue mile
- Connections to activity centers
- Land use compatibility
- Impact on regional travel and air quality
- Capital cost per mile
- Annual O&M cost per rider
- Ease of implementation
- Compatibility with freight railroads

Evaluation Criteria

Evaluation criteria for stand-alone corridors:

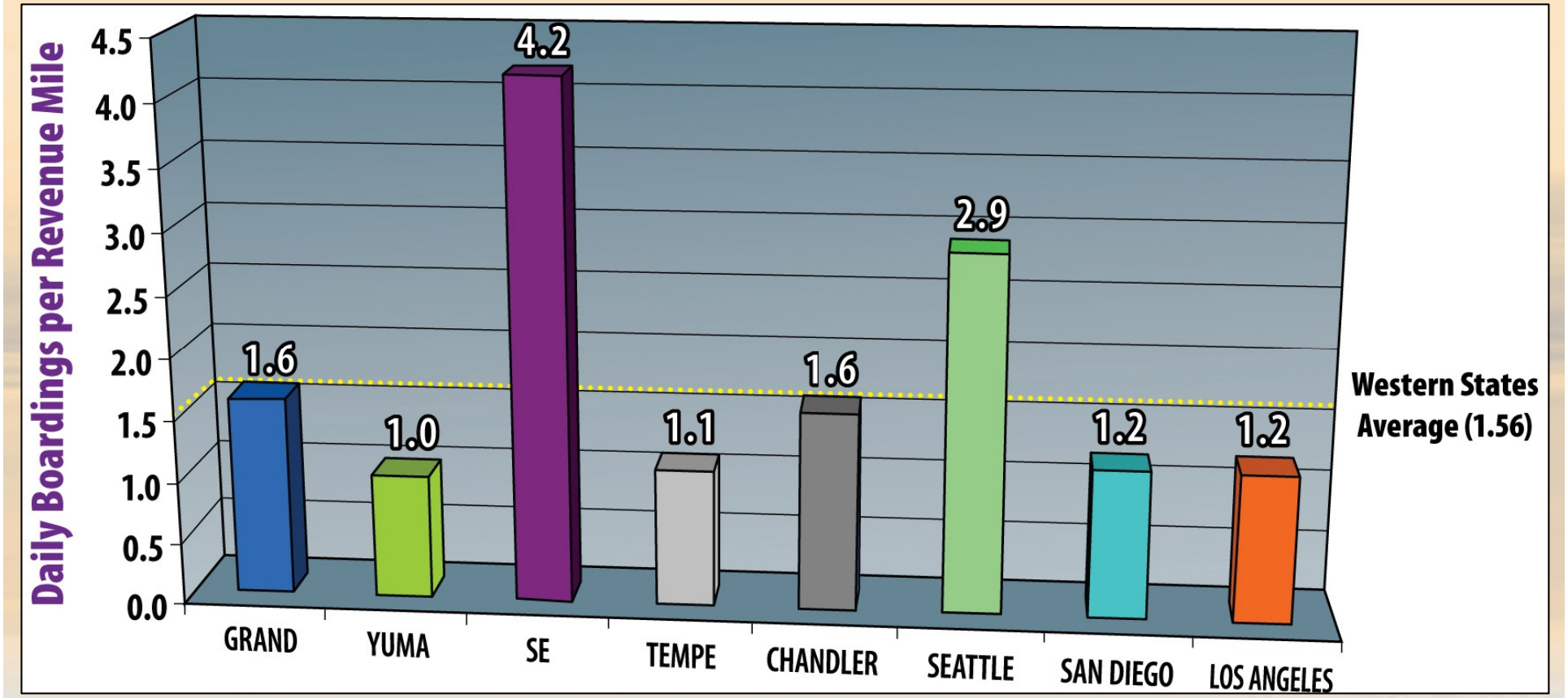
*(key discriminators in **blue**)*

- **Travel time savings**
- **Boardings per revenue mile**
- Connections to activity centers
- Land use compatibility
- Impact on regional travel and air quality
- **Capital cost per mile**
- **Annual O&M cost per rider**
- **Ease of implementation**
- Compatibility with freight railroads

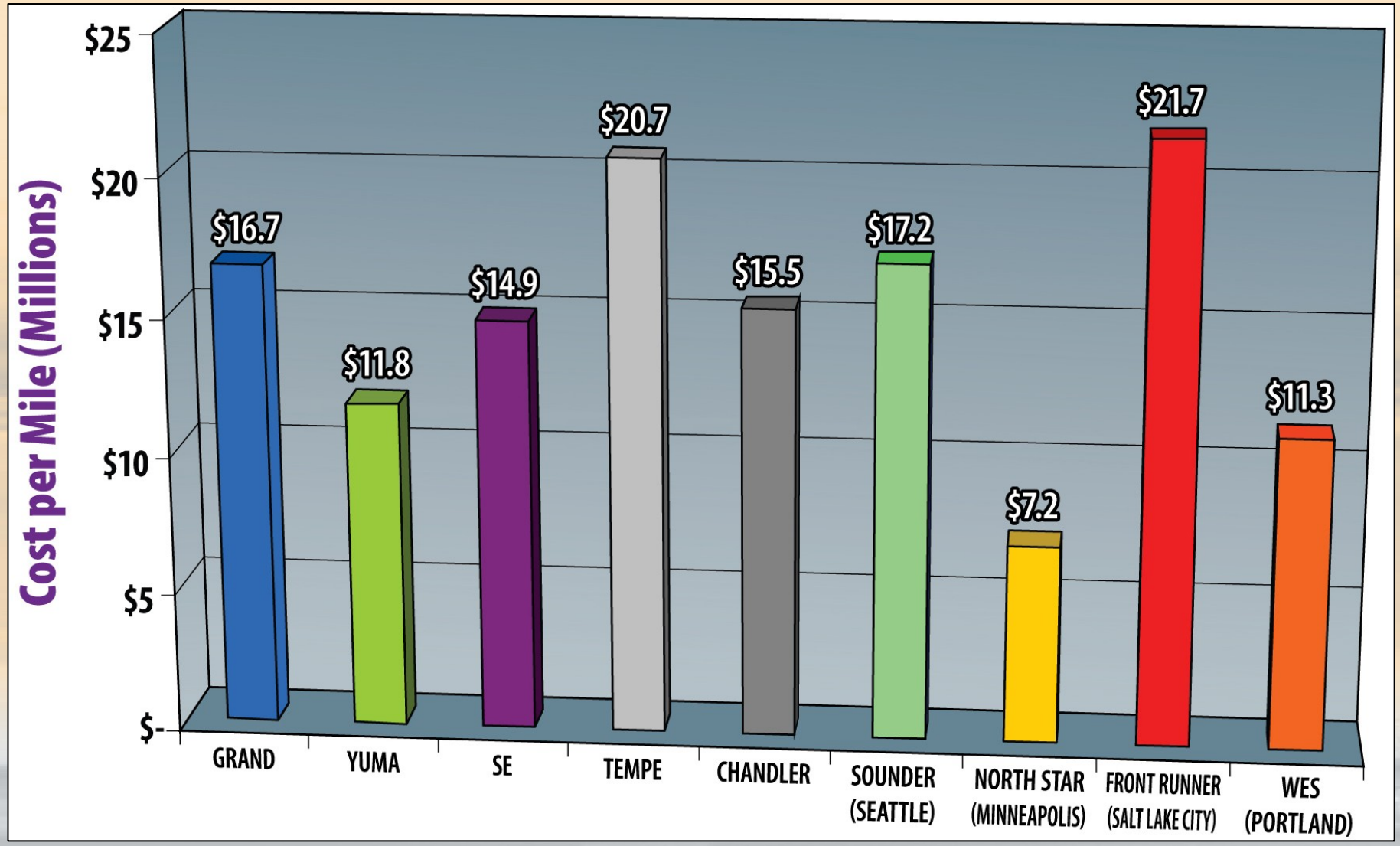
Stand-Alone Corridors: Evaluation Results

Alternative	Results
SE Corridor	Top Tier
Grand Corridor	Middle Tier
Tempe Corridor	Middle Tier
Chandler Corridor	Middle Tier
Yuma Corridor	Lower Tier

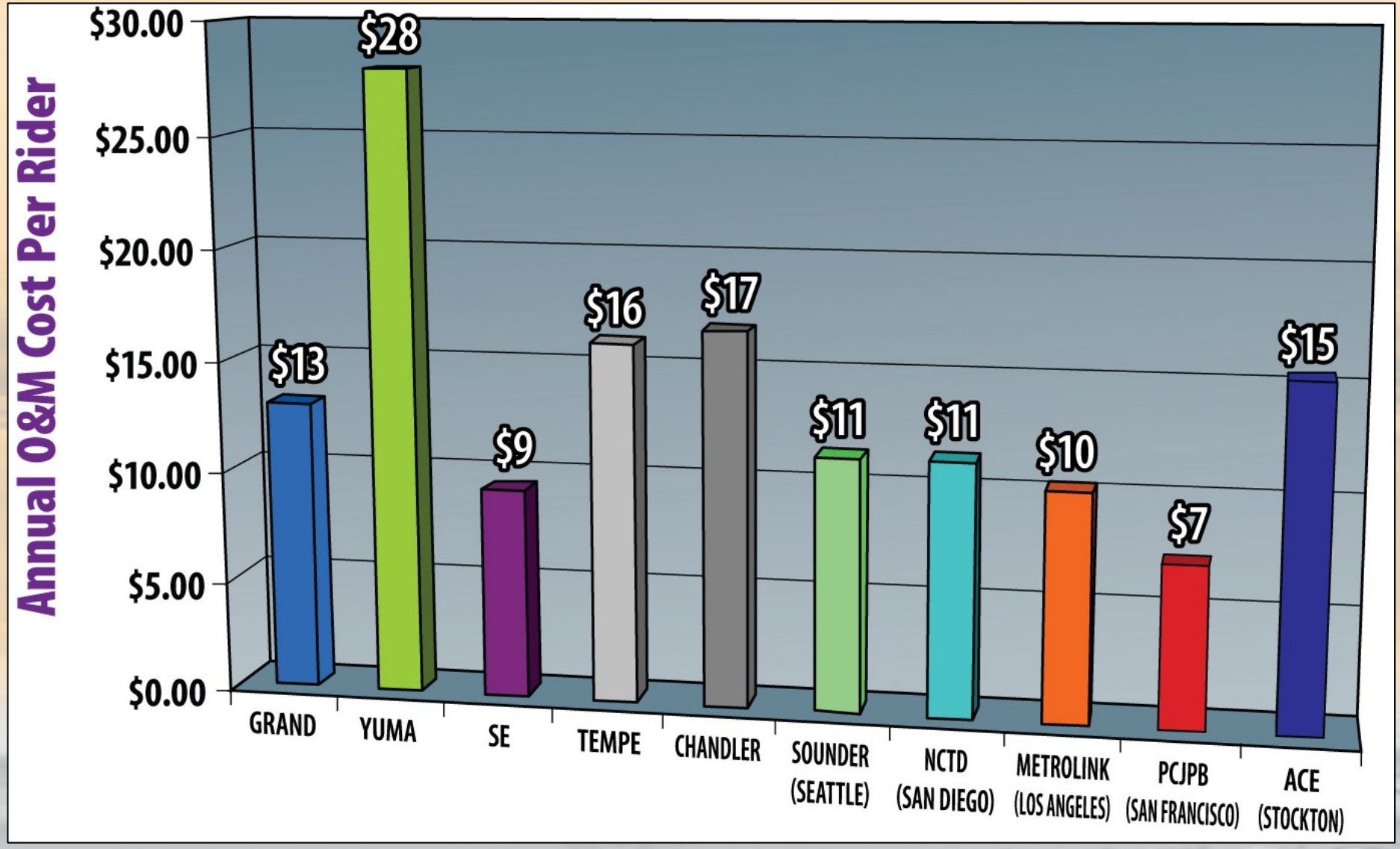
Stand-Alone Corridors: Boardings per Mile



Stand-Alone Corridors: Capital Cost per Mile



Stand-Alone Corridors: O&M Cost per Rider



Stand-Alone Corridors: Major Discriminators

Top Tier:

SE Corridor

- 2 - 4 times the number of boardings per revenue mile as all other corridors
- 18 minute end-to-end travel time savings
- Second lowest capital cost per mile
- Lowest O&M cost per rider

Middle Tier:

Grand Ave.

- Boardings per revenue mile are close to Western States average
- 24 minute end-to-end travel time savings
- Moderate capital cost per mile
- Second lowest O&M cost per rider

Tempe and Chandler corridors (borderline middle tier)

- Low to moderate boardings per mile
- High O&M cost per user
- Moderate to high capital cost per mile

Stand-Alone Corridors: Major Discriminators

Lower Tier:

Yuma Corridor

- **Lowest capital cost per mile w/relatively few infrastructure improvements**
- **But has lowest boardings per revenue mile**
- **Minimal travel time savings**
- **Highest O&M cost per rider**

Interlined Corridors: Evaluation Results

Evaluation criteria for interlined corridors:

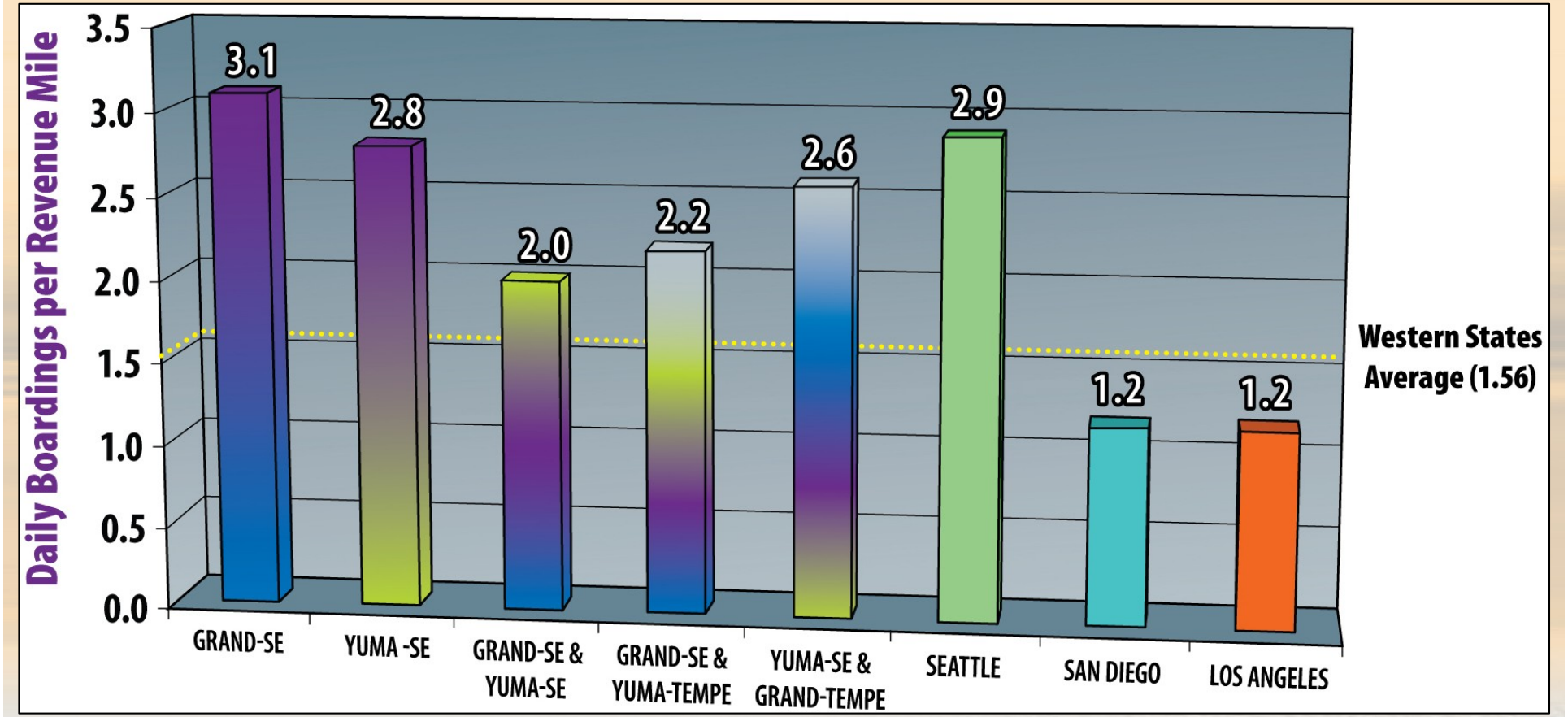
(focus on cost-effectiveness)

- Boardings per revenue mile
- Capital cost per mile
- Annual O&M cost per rider

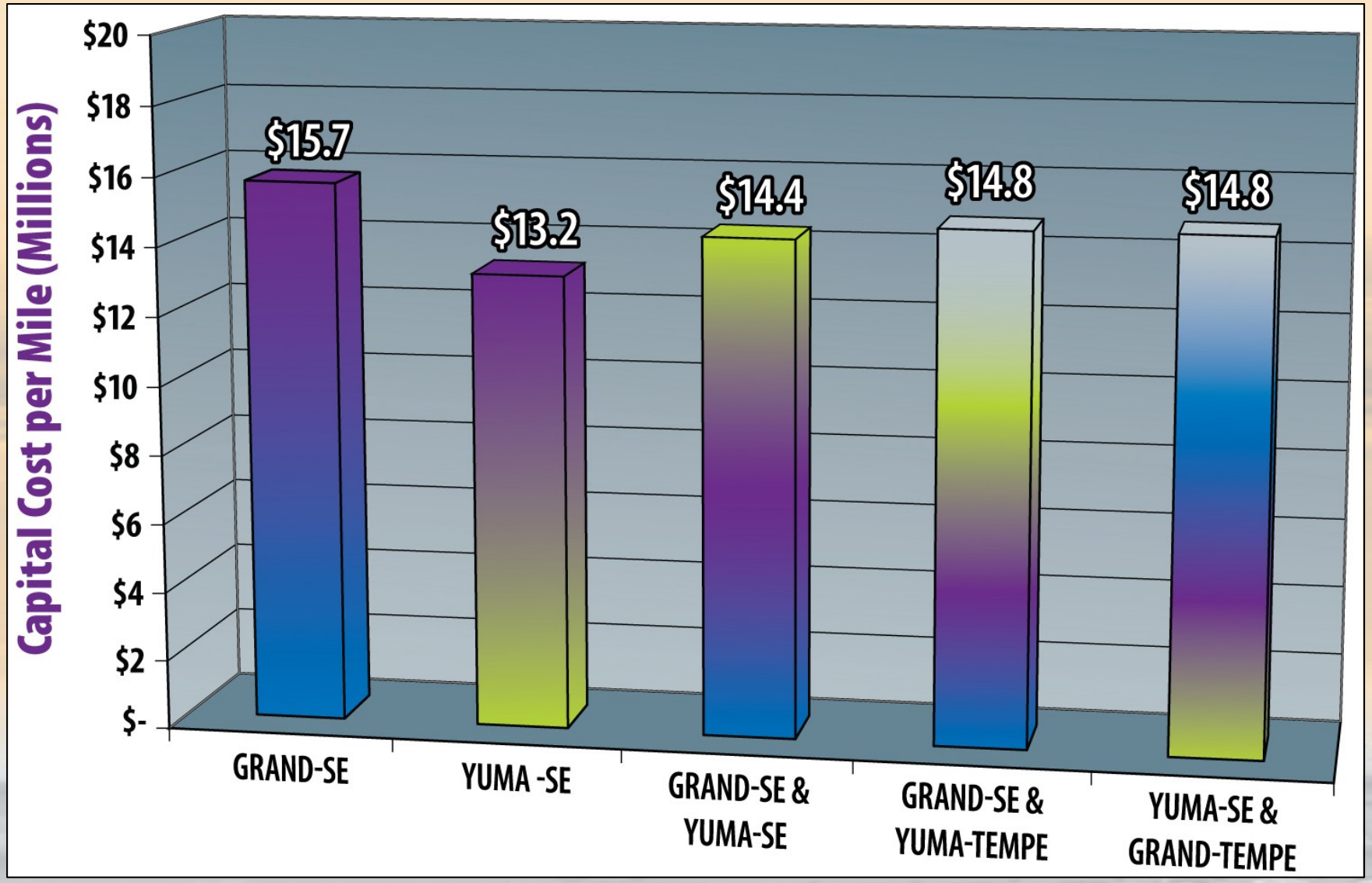
Interlined Corridors: Evaluation Results

Alternative	Ranking
Yuma-SE	Top Tier
Grand-SE	Top Tier
Yuma-SE & Grand-Tempe	Middle Tier
Grand-SE & Yuma-Tempe	Middle Tier
Grand/Yuma/SE	Lower Tier

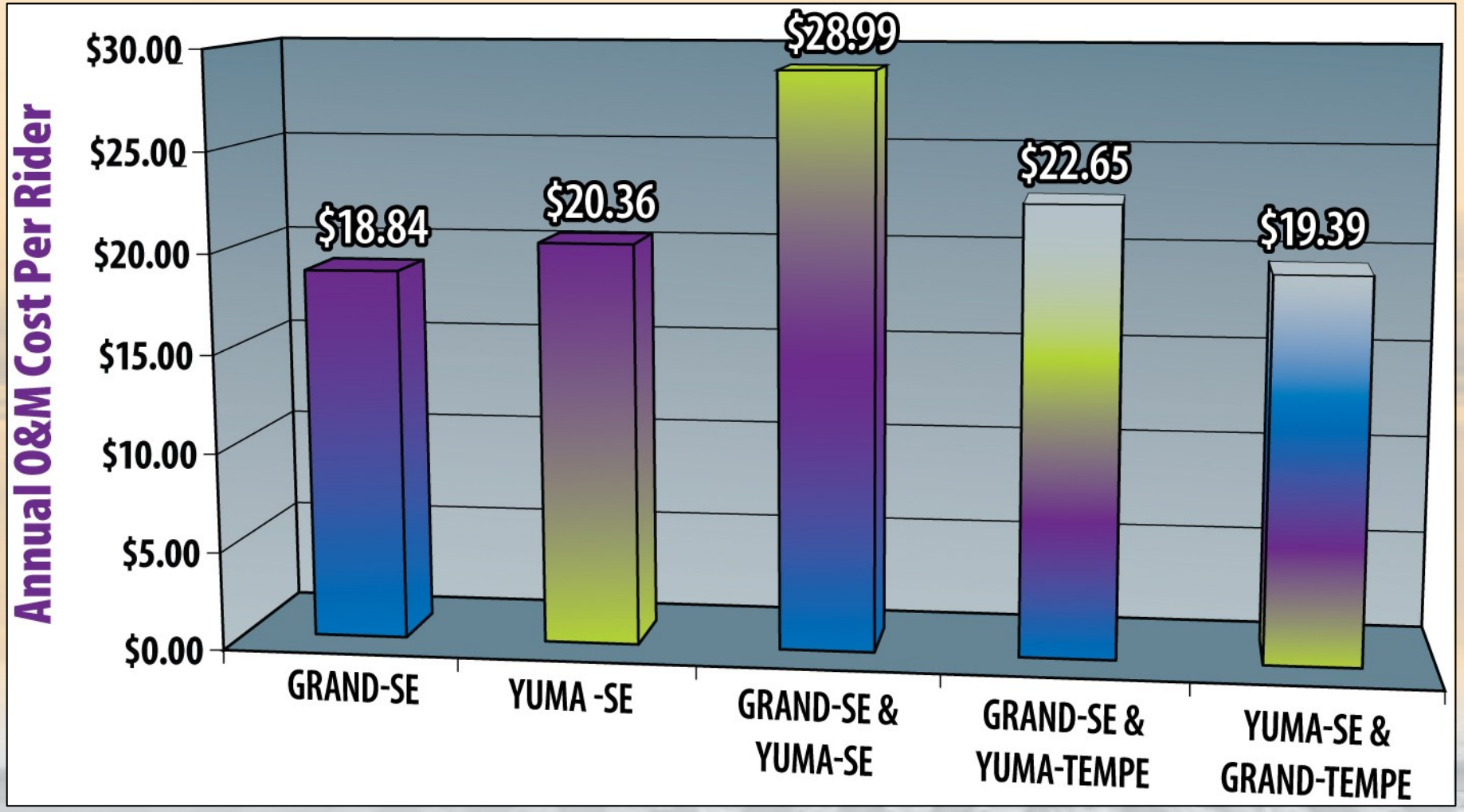
Interlined Corridors: Boardings per Mile



Interlined Corridors: Capital Cost per Mile



Interlined Corridors: O&M Cost per Rider



Interlined Corridors: Major Discriminators

FINDING:

Each Interlined Alternative increases overall ridership over Stand-Alone Alternatives.

<u>Top Tier:</u>

Yuma-SE

- Moderate boardings per mile
- Lowest capital cost per mile
- Moderate O&M cost per rider

Grand-SE

- Highest boardings per mile
- High capital cost per mile
- Lowest O&M cost per rider

Interlined Corridors: Major Discriminators

Middle Tier:

Grand/SE/Yuma/Tempe combinations

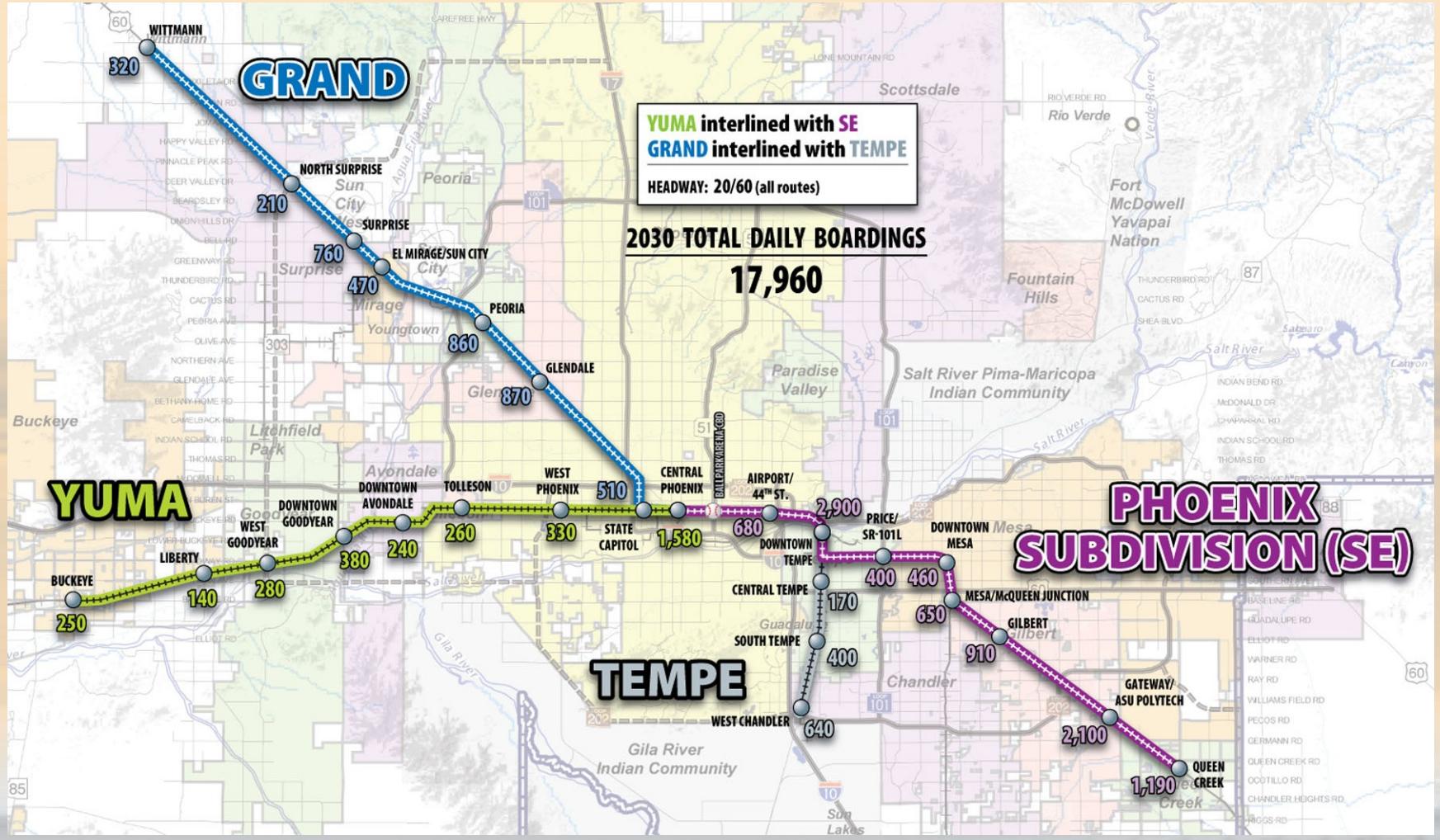
- Low to moderate boardings per mile
- Moderate capital cost per mile
- Moderate O&M cost per rider

Lower Tier:

Grand/Yuma/SE

- Lowest boardings per mile
- Moderate capital cost per mile
- Highest O&M cost per rider

Overall – Most Productive System



Corridor Prioritization
&
Phasing Options

Corridor Prioritization: Segment #1

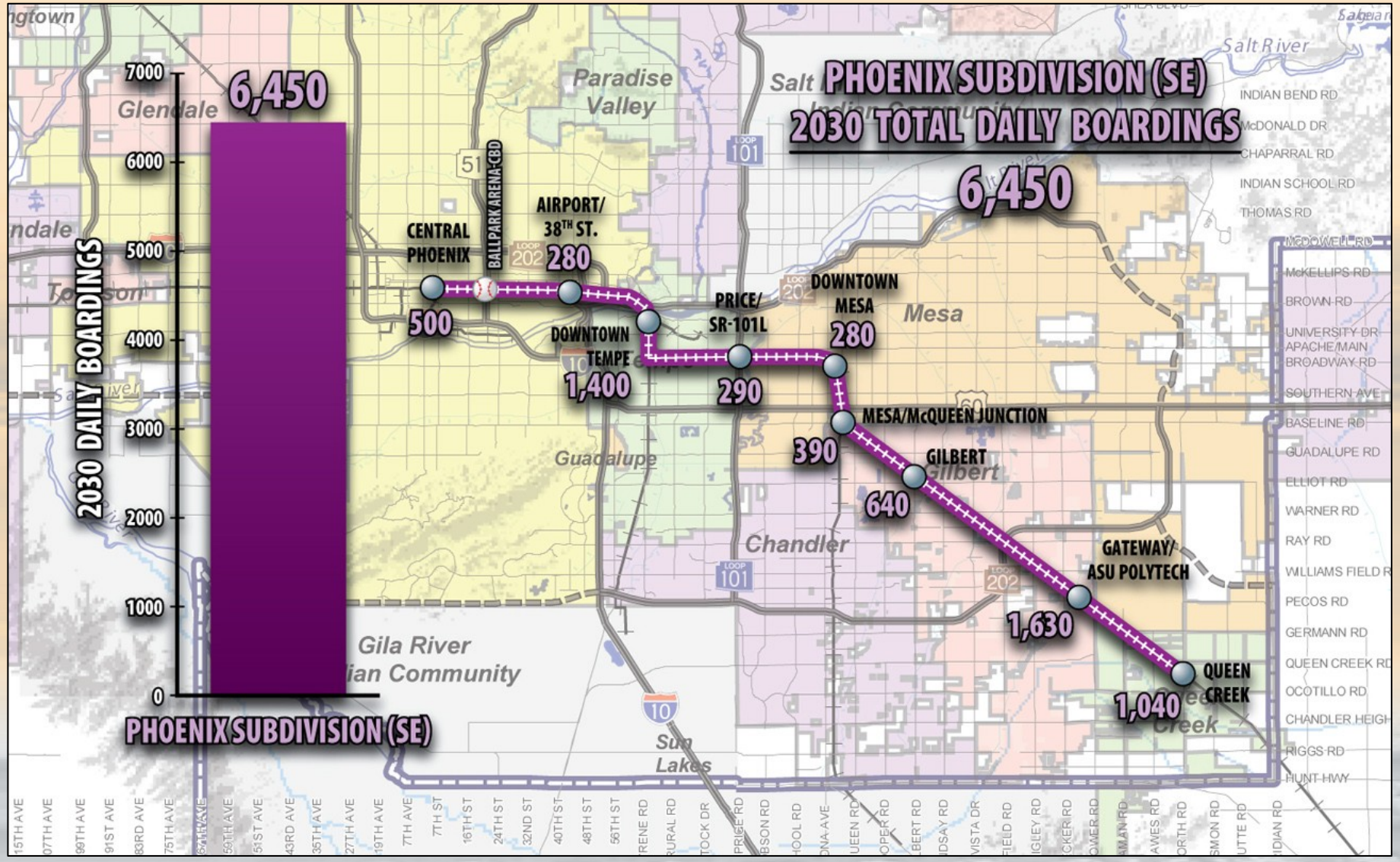
Q: Which corridor is recommended for start-up commuter rail service?

A: SE Corridor: Significantly highest ridership, offers substantial travel time savings, and is cost-effective.

However, if use of railroad right-of-way is a fatal flaw, due to costs and agreements to get through rail yards in Central Phoenix, than options include:

- Build Grand Corridor first; or
- Build SE segment between Tempe and Queen Creek and transfer to LRT in downtown Tempe or at the airport.
- Build Tempe or Chandler segment in lieu of SE.

Corridor Prioritization: Segment #1



Corridor Prioritization: Segment #2

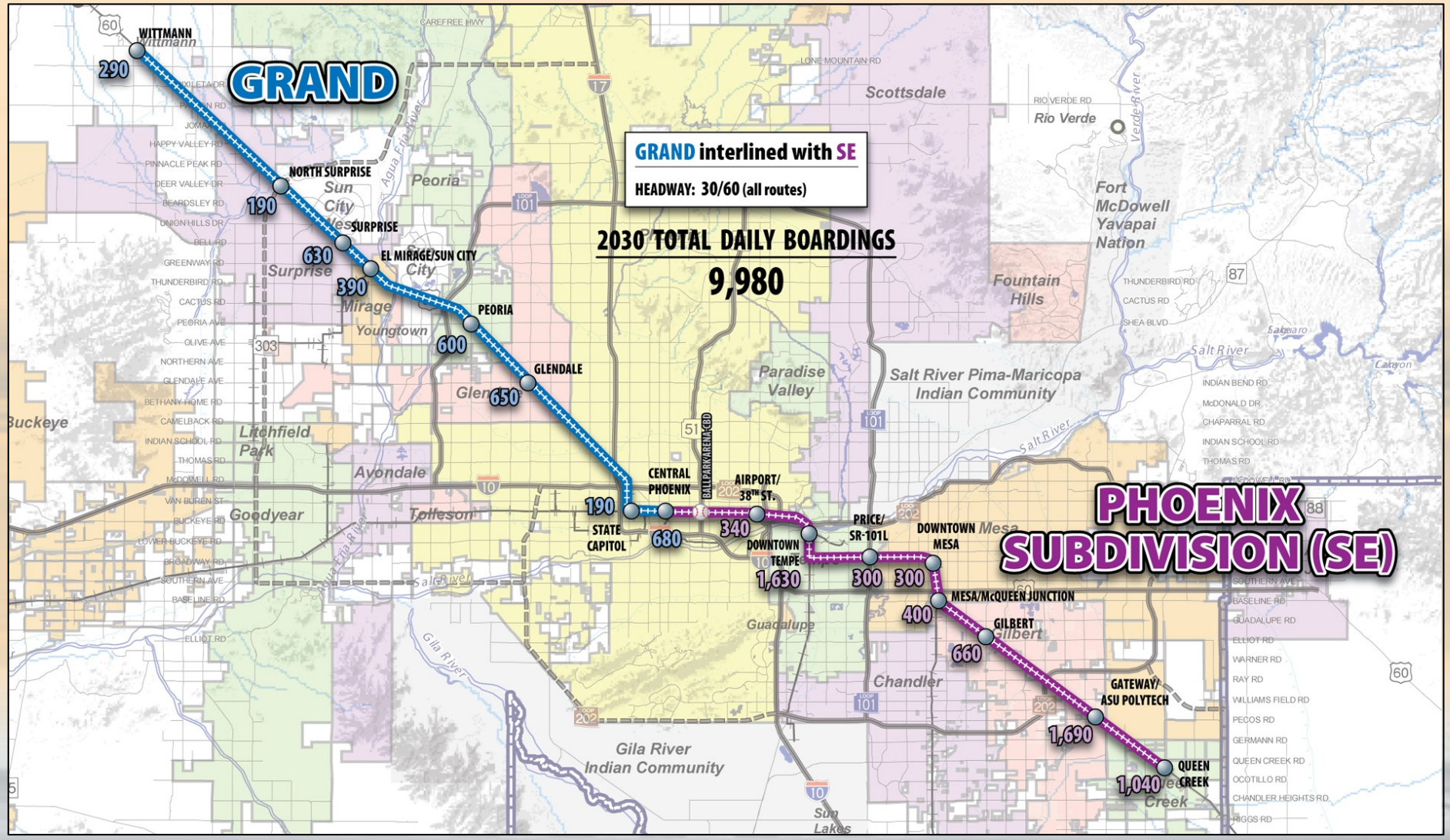
Q: Which corridor is recommended to interline with SE, if it's built as Segment #1?

A: While Yuma-SE may be more *cost-effective* (low capital cost for Yuma coupled with high ridership on SE), Grand-SE is more *effective* because it carries more riders.

- Ridership is greatest when most productive East Valley and West Valley Corridors – Grand Avenue and SE – are combined.

Therefore, Grand-SE is recommended as first system interline.

Corridor Prioritization: Segment #2



Corridor Prioritization: System Build-Out

Q: How should the remainder of the corridors be phased?

A: No one outstanding performer in other three corridors – Tempe, Chandler, Yuma. Considerations for future phasing and system build-out will include:

- Development patterns
- Changes in travel demand
- Community support
- Potential integration with intercity rail, etc.

Short and Long-Term Implementation Strategies

- **Governance Options**
- **Funding Options**
- **Near-term Implementation/Next Steps**

Governance Structure Considerations

- Commuter rail service area will expand beyond political boundaries of existing local transit service areas and potentially beyond MAG boundaries.
- Governance structure should reflect financial, political, and representational patterns of the areas served by commuter rail.
- Success factors include the ability of the institutional arrangement to:
  - (1) balance local control with the need for regional system performance; and
  - (2) provide stable funding opportunities.

Governance Structure Models

Regional Transit Authority or District (Multi-modal)	*Responsible for multi-modal services.*
Regional Transit Authority or District (Single	*Single provider of commuter rail service.*
Joint Powers Authority	*Sub-regional agreements among cities to contribute to the management of rail service in a common corridor.*
Division of State DOT	*More common in small states with one dominant metropolitan area.*
Division of MPO	*Less common.*

Regional Transit Authority/District (Multi-Modal)

Examples:

- Sound Transit District, Washington
- Tri-County Metropolitan District, Oregon

Advantages:

- Greater efficiencies & coordination between all transit modes

Disadvantages:

- May lack focus
- Cumbersome political process to expand taxing authority
- Learning curve for RPTA to manage rail program

Regional Rail Authority/District (Single-Purpose)

Example:

- Sonoma-Marin Area Rail Transit, California

Advantages:

- Eliminates competition for resources being distributed among transit modes
- All funding partners equally represented

Disadvantages:

- Adds another entity to mix
- Requires close coordination with METRO & RPTA
- Unable to serve jurisdictions which do not vote to join, leaving gaps in representation/service.
- Greater cost and start-up time to form new authority

Joint Powers Authority

Examples:

- Peninsula Corridor Joint Powers Board, California
- South Florida Regional Transit Authority
- Virginia Railway Express

Advantages:

- Maximum flexibility
- Does not require legislative authority
- If METRO's mission is expanded, JPA will benefit from similar rail expertise with LRT.

Disadvantages:

- Potential overlapping responsibilities within representative entities
- Each entity would be required to secure its own funding source & funding may be less stable
- May start "turf war"
- Would present a learning curve

Division of State Department of Transportation

Example:

- Maryland Transit Administration

Advantages:

- Could apply for funding from Federal programs that local entity may not be able to obtain
- Empower single railroad negotiator and greater coordination for unified statewide passenger rail service

Disadvantages:

- Institutional learning curve.
- May rely primarily on state legislative appropriations
- May bring into question equity between regions of the state
- Increases state influence over local/regional decisions

Division of Metropolitan Planning Organization

Example:

- New Mexico Mid-Region Council of Governments

Advantages:

- MAG could continue its role as lead implementation agency and pass-through funding entity

Disadvantages:

- Continued/greater collaboration and coordination among existing transit authorities
- Northern Pinal County is part of Central Arizona Association of Governments, or CAAG, (not within MAG region)
- Potential confusion within the MAG and CAAG transportation planning processes
- Requires expansion of MAG charter
- Requires establishment of new operational division within MAG

Funding Options

State Funds

- Highway User Revenue Funds
- Statewide Transportation Acceleration Needs (STAN) Account
- New Dedicated State Transportation Funding, e.g. Statewide Tax

Federal Funds

- FTA Section 5307, Urbanized Formula
- FTA Section 5309, New Starts
- FHWA Congestion Mitigation and Air Quality (CMAQ) Funds
- FHWA Surface Transportation Program (STP)
- FRA Section 130, Grade Crossing Safety Improvements
- New Federal funding via Re-Authorization

Funding Options

Regional and Local Funds

- Maricopa County Transportation Excise Tax, e.g. currently regional half-cent sales tax
- Potential New Funding Opportunities
  - Payroll Tax
  - Motor Vehicle Sales Tax
  - Vehicle Rental Tax
  - Local Gas Tax
  - Vehicle Registration Fee

Public Value Capture

- Benefits Assessment Districts
- Tax Increment Financing

Public Private Partnerships

Near Term Implementation Steps

Five Year Plan between 2010 and 2015

- Passage of enabling legislation relative to liability and indemnification
- Coordination with Railroads
  - Develop partnerships to investigate options for MOU
  - Advance the design and operating costs
- MAG will coordinate with ADOT on the upcoming Phoenix-Tucson Alternatives Analysis, which will help guide future planning activities in the southeast valley
- Initiate collaborative local planning efforts
- Identify funding commitments
- Initiate the process for federal funding
- Develop and implement governance plan
- Preserve future options

Long Term Implementation Steps

Longer Horizon, 2015+

- Formalize partnership with railroad
- Obtain committed funding sources
  - Federal
  - Local
- Design, construct, and operate initial commuter rail system
- Further planning to develop a seamless transportation system and meet regional sustainable goals

Next Steps

- **Finalize project reports**
- **Present results to MAG Committee Structure**